from the night of the 16th until the morning of the 26th of August. There was little actual suffering on that account, however, as water for cooking and drinking purposes was obtained from cisterns and several artesian wells in the city.

Post-office inspectors report the destruction of the post offices at Chocolate Bayou, Glen, Kemah, Lynchburg, Quintana, Tomball, Wallisville, and Winfree, Tex., with all contents.

The greater portion of the Marconi wireless station fell across and wrecked the building in which the station was located. The only telegraph service in or out of Galveston from the evening of the 16th of August until the morning of the 21st was by radio from the U. S. Army transport *Buford*.

It has been estimated that the damage from this storm to crops, buildings, railroads, shipping, live stock, and other property will aggregate close to $50,000,000, but these figures are probably much too large. Of the total amount approximately $6,000,000 occurred at Galveston.

In the city of Houston the damage amounted to about $1,000,000, mainly to buildings, railroads, telegraph and telephone lines, and nearly every building shared in the damage. Crops in fully one-half the State of Texas suffered severely. Nearly all open cotton was blown away, and much cotton, late corn and rice was flattened by the wind and rain.

Beyond the State of Texas there was also considerable damage by high winds as far as the lower Ohio Valley, particularly over eastern Missouri, but much greater damage was caused by the severe floods resulting from the torrential rains that extended from Texas northeastward to New York. These floods seriously injured the crops in many localities, while in many others where there were no floods, the heavy rains beat down the standing crops

COMPARISON WITH THE STORM OF 1900.

Figure 1 (XLIII–92) shows the paths of the storms of 1900 and 1915. An inspection of these paths discloses the fact that the total time occupied from the first to the last appearance of both storms within the field of observation was exactly 14 days, and that the storm of 1900 moved with a slower velocity of progression before reaching its recurve than after, whereas in the storm of 1915 the reverse was true. The two paths are very similar in many respects, although that of 1915 lay a little to the southward of that of 1900 until the St. Lawrence Valley was reached. In previous published reports on the storm of 1900 the storm path shows a strong deflection toward the southwest Florida coast, but reports received from vessels and other sources after those publications indicated the fact that this deflection to the right was not so strong as has been supposed, and the track as here charted is thought to represent more nearly the true conditions. It was carefully plotted from all available observations. As to the comparative intensities of the two storms, it is perhaps idle to speculate. The wind velocities were not greatly different, and the effects of the two storms were much the same, except as modified by artificial conditions in the vicinity of Galveston. The barometer reading of 28.48 inches at Galveston in 1900 was 0.15 inch lower than the lowest reading recorded in 1915, whereas the lowest reading of 28.20 inches at Houston in 1915 was 0.28 inch lower than the lowest barometer reported in Galveston in 1900. Unfortunately there are no records from Houston for the year 1900, and a precise comparison can not be made.

THE WORK OF THE WEATHER BUREAU IN CONNECTION WITH THE STORM.

If one may judge from press reports and letters received at the Weather Bureau, the warnings issued were the most complete and successful ever issued by the bureau for a tropical storm. Granting this to be true, it must not be assumed that the thoroughness and efficacy of the warnings were alone due to the work of any particular individual. In very large measure the success in forecasting the path and rate of the movement of the storm was rendered possible by the splendid radio service which has become a valuable adjunct of Weather Bureau forecast work since the last severe tropical storm. While it is true that no reports were received from the immediate vicinity of the storm center, probably because the warnings kept the vessels away, those that were received after the storm passed over extreme western Cuba were sufficiently close to the eastward to afford extremely valuable assistance to the forecaster, while the almost total absence of important marine disasters bears abundant testimony to the efficiency of the warning service by means of the radio distribution. There were no useless warnings. The storm did not reach any locality that had not previously had ample warning, and no warnings were issued for any locality that the storm did not reach.

However, the splendid efficiency of the radio service can not and does not detract from the equally efficient work performed by the Weather Bureau stations along the West Indian and Gulf coasts. The distribution of the warnings was as widespread and complete as human energy could make them, and this service undoubtedly saved many lives and a considerable amount of property. Along the Louisiana coast the cordial and effective cooperation of the telegraph and telephone services and of private individuals enabled the official in charge of the local office of the Weather Bureau at New Orleans to make a wonderful distribution of the warnings, while the official in charge at Galveston and the storm warning displayman at Seabrook, Tex., by supplementing the official warnings by personal service to individuals saved many hundreds of lives. It was fortunate also for all concerned that during the first four days of the storm its center was sufficiently close to the stations of observation to enable the forecaster to indicate its velocity of movement with much greater precision than would have been possible had the storm center been at a considerable distance from land. This is an additional reason for the establishment and operation of many more stations of observation in West Indian waters, especially in the vicinity of Panama, if the Weather Bureau is to be able in the future to forecast the approach, progression, and intensity of West Indian hurricanes for the benefit of the commerce and the military establishment of the United States. This same thought should also be extended so as to comprise a more enlarged radio service in West Indian waters. The radio service now conducted by the Weather Bureau in cooperation with the Navy Department, and commercial organizations is extremely effective and valuable, but it is confined entirely to the waters of the western Atlantic, the western Caribbean, and the Gulf of Mexico. Reports are rarely received from the eastern Caribbean, but with the extension of the commercial activities of the United States in the days to come it is to be hoped that this field will be covered as carefully and as fully as are the adjacent waters.

It is a pleasure also to make grateful acknowledgment here of the services rendered by Señor Luis G. y Carbonell, chief of the meteorological service at Habana, Cuba, while the storm was passing through the Caribbean Sea. Señor Carbonell responded promptly to every request for special observations from various points in Cuba, often at inconvenient hours, and the data were of great assistance to the forecaster.

The following press comments relative to the work of the Weather Bureau in connection with the storm are indicative of the uniform character of the large number that was received:

New Orleans, La., Daily States, August 20, 1915 (editorial):

One of the most fortunate phases of the great tropical storm is the small loss of life, relatively speaking, which it left in its wake.

In the storm of 1900, six thousand was the death toll in Galveston alone, and two or three thousand more perished elsewhere, most of them on the Texas mainland. This year, although the storm was of a severity comparable with that of 15 years ago, the total deaths in Galveston, on the mainland and the sea seem likely to run under 300.

In 1900 there was some criticism of the Government, not entirely justified, for its warnings of the storm. But no such criticism lies in connection with this year's storm. If the loss is small, considering the duration and fury of the blow, immeasurable credit is due the Government forecasters for the remarkable accuracy with which they outlined the track of the storm and the ample opportunity they gave not only to shipping but to those on land to protect themselves.

In consequence, shipwrecks have been conspicuously few. Vessels at sea had time to run for cover. Those in ports were enabled to postpone their departure until the actual danger was passed.

Not only at Galveston but all along the coast, even at remote points, messages of the Weather Bureau were received in plenty of time to let the cautious seek places of safety; and no one doubts that, admitting fully the part the seawall played, the exodus of thousands, due to the accuracy of the Bureau's warnings, was one of the factors which held the Galveston fatalities down to such small figures.

Rochester, N. Y., Union and Advertiser, August 21, 1915 (editorial):

Many lives were saved at Galveston by the warning of the approaching storm issued by the Weather Bureau. According to dispatches, the forecaster not only predicted the hurricane, but sent men on motor cycles to various sections, notifying the inhabitants to seek safer places of refuge if they hoped to save their lives. The warning was heeded by the vast majority and they lived to tell the story; by some it was ignored, and they perished because of their heedlessness. Only Galveston's seawall was more effective than the Government Weather Bureau in preventing a repetition of the disaster of 1900, when 4,000 persons were killed.

The incident makes some of the fun that is poked at weather forecasters in all sections of the country sound a little cheap. It puts to shame some of us who have been over zealous in enumerating the mistakes of the forecasters and lax in giving credit to their accuracy. The Galveston incident is the most striking example of the real value of the Bureau that has come up in many years, but not a storm sweeps across the country that is not preceded by property-saving and life-saving warnings. The next time the "weather man" fails to predict a thunder shower that spoils our picnic, let's remember the lives he saved at Galveston.

Galveston, Tex., Daily News, August 17, 1915:

* * * Heralded for two full days in advance by the United States Weather Bureau, the storm did not take Galveston unaware or find it unprepared. Warned repeatedly and thoroughly by the local weather forecaster, W. P. Stewart, every man, woman, and child had ample time in which to seek places of safety in the larger buildings of the business and central residence district, and it was largely due to this fact that none were caught in the wrecked houses on the beach front.

Houston, Tex., Post, August 22, 1915:

In the retrospection after the storm, when the work of searching out the dead and missing is still going on, there remains to be told the story of the part played by the United States Weather Bureau and especially by the stations in Houston and along the coast. When this story is told it will be learned why the loss of life is not considerably greater.

Those who watched the bulletins of the department since the first warning was issued a week before the storm struck Texas, will recall with what prophetic accuracy its direction, its nature, and its violence were heralded to the people of Houston from day to day. Good work was accomplished by the display men in the various substations along the coast, who not only posted the warnings but personally advised the people in the small communities to take the necessary precautions.

An instance of this was the work of W. B. Stearns, the display man at Seabrook, who made the rounds of the flats in that section and urged the people to leave for the high ground. This is simply one example of similar efforts on the part of all the display men in the district.

Probably no more daring feat was performed during the storm than that of two assistants in the office of Dr. Bunnemeyer in the Ste art Building. When the storm was at its height Tuesday morning the anemometer which records the velocity of the wind was put out of commission at 4:35 o'clock. At 5:50 the two men clambered to the roof and replaced the equipment with a new one. The record immediately after showed that the wind was blowing 80 miles an hour, the highest during the entire storm.